Comparing Simple and Complex Wildlife Population Models through a Cooperative Agreement between the U.S. Environmental Protection Agency and the University of Chicago

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The U.S Environmental Protection Agency's (U.S. EPA) Office of Research and Development (ORD) and the University of Chicago's Center for Integrating Statistical and Environmental Science (CISES) have established a cooperative agreement focused on several complex analytical challenges in the health and ecological arenas. One of these challenges pertains to assessment of chemical stressor effects on wildlife species. Current methods of wildlife risk assessment rely heavily upon laboratory measurements of chemical effects on individual organisms, but it is not well known whether these lab tests are predictive of impacts for a whole species or population. The scientific community has produced methods for extrapolating from individuals to whole populations, but the data needed to apply them are often expensive to obtain. This motivates a need for approaches that are broad in scope and make optimum use of limited data. For other reasons, scientists outside of government and industry also seek methods and theories that maximize generality and minimize the need for case-specific data. This shared pursuit of widely applicable analytical methods provides a strong foundation for partnerships between government and academia. As one example, CISES and ORD's Atlantic Ecology Division (within the National Health and Environmental Effects Research Laboratory) are comparing simple and complex methods of population analysis to determine the circumstances under which generalized simplistic methods are sufficiently accurate for wildlife risk assessment. Results from this collaboration will maximize the value of existing data to the risk assessment process and will bring into sharper focus those scenarios where complex methods are required.